

Data Sheet

# PLUS+1<sup>®</sup> Safety Controllers

## SC050-120 and SC050-122

### Advanced mobile machine management

These PLUS+1<sup>®</sup> SC controllers are advanced elements of the PLUS+1<sup>®</sup> family of mobile machine management products. The design of this general purpose controller includes features required for sophisticated machine control strategies. It is equally suited for use in safety related or general machine control applications.

These controllers are pin compatible with the PLUS+1<sup>®</sup> MC equivalent controller. These controllers have dual processors with the secondary processor having access to all controller inputs and supervisory control of outputs. These controllers support smart digital inputs. Current measurement capability has been added to some multifunction inputs. Device outputs can be individually controlled by the secondary processor. These controllers support low power capability.

The SC050-122 controller has an application key that enables the use of Danfoss developed GUIDE machine control solutions. The same GUIDE HWD files are used with both controllers. The user can develop applications for these controllers using the PLUS+1<sup>®</sup> GUIDE development environment. Application code can be written for both the primary and secondary processors.



### Features

- Programmable in PLUS+1<sup>®</sup> GUIDE
- Same general I/O content as the PLUS+1<sup>®</sup> MC050-020 controller
- Dual processors:
  - Primary: 512kB flash, 128kB RAM
  - Secondary: 128kB flash, 64kB RAM
  - Internal micro to micro UART
- 12 bit analog to digital converter
- 7 to 36 Vdc power supply, monitored internally
- 24 user-defined inputs
- 14 user-defined outputs
- Each PWM output may have a unique frequency
- 2 CAN 2.0B ports, the shield pin can be configured as a DIN/AIN
- User-defined 3 to 12 Vdc regulated power supply for external sensors
- 2 LEDs under user control
  - Both have alternate yellow color under kernel control to indicate low-level software/hardware failures
- Power supply for external sensors rated at 5 Vdc to 500 mA
- Operating temperature range: -40°C to +85°C
- EMC rating is 150 V/m
- CE Compliant
- Certified SIL 2 Capable per IEC 61508 : 2010 Parts 1-7 and IEC 62061:2005+ A1:2012+ A2:2015

Comprehensive technical literature is online at [www.danfoss.com](http://www.danfoss.com)

**24 User-defined Inputs**

- (6) Digital/Analog/Resistance/4-20 mA current
- (6) Digital/Analog /Frequency
- (2) Digital/Analog/CAN Shield
- (1) Digital/Analog/1.6 V<sub>DC</sub> sensor power (for smart digital input capability)
- (1) Digital/Analog/3.3 V<sub>DC</sub> sensor power (for smart digital input capability)
- (8) Digital/Analog

**14 User-defined Outputs**

- (6) 3 A Digital: configurable as source only
- (8) 3 A PWM: (33 to 4000 Hz or 20 kHz) configurable as open or closed loop with current control

**Specifications**

*Product parameters*

<b>Supply voltage, minimum</b>	7 to 36 V <sub>DC</sub>
<b>Operating (ambient) and storage temperature</b>	-40 °C to 85 °C [-40 °F to 185 °F]
<b>IP rating (with mating connector)</b>	IP 67
<b>EMI/RFI rating</b>	150 V/M
<b>Weight</b>	0.53 kg [1.16 lb]
<b>Vibration / Shock</b>	IEC 60068-2: 64 / 27 test Ea
<b>Max. current: sourcing / sinking</b>	40 A / 8 A

**Caution**

PCB damage may occur. All device power supply + pins must be connected to battery +.

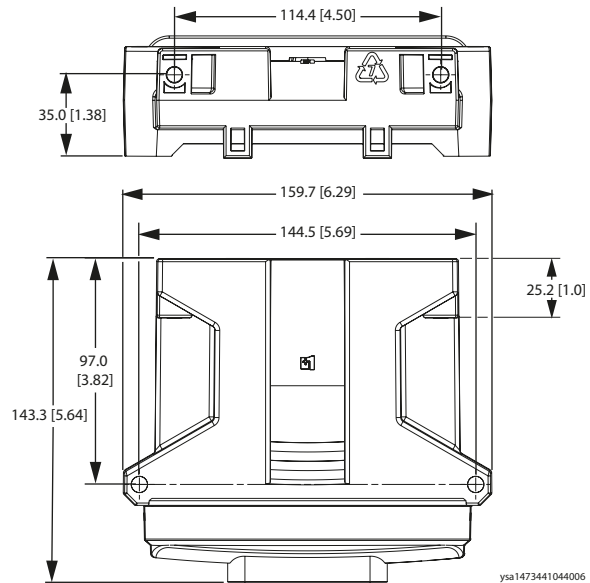
This device is not field serviceable.

Opening the device housing will void the warranty.

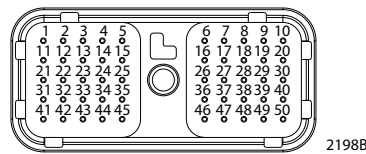
Use care when wiring mating connector.

Pin-outs listed are for device pins.

**Dimensions, mm [in]**



**C1 controller 50-pin assignments**



- 1 Power ground -
- 2 Power ground +
- 3 CAN0 +
- 4 CAN0 -
- 5 DIN/AIN/CAN shield
- 6 DIN/AIN/SnsrPwr1.6 V<sub>DC</sub>
- 7 DIN/AIN/SnsrPwr3.3 V<sub>DC</sub>
- 8 3-12 V<sub>DC</sub> SnsrPwr +
- 9 SnsrPwr - (sensor ground)
- 10-17 DIN/AIN
- 18-19 DIN/AIN/ResIN/CrntIN
- 20 CAN1 +
- 21 CAN1 -
- 22 DIN/AIN/CAN shield
- 23-24 DIN/AIN/ResIN/CrntIN
- 25-30 DIN/AIN/FreqIN
- 31-32 DIN/AIN/ResIN/CrntIN
- 33-38 DOUT
- 39-46 PWMOUT/CrntOUT/DOUT
- 47-50 Power supply +



*Product part number*

<b>SC050-120</b>	11159588
<b>SC050-122 (with application key)</b>	11159591

*Related products part numbers*

<b>CG150 CAN/USB Gateway</b>	11153051
<b>DEUTSCH mating connector bag assembly</b>	10102024 (16 to 20 AWG)
<b>PLUS+1<sup>®</sup> GUIDE single user license</b>	10101000

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